

# Registry Data Accuracy Improvements

Chimi Dorji

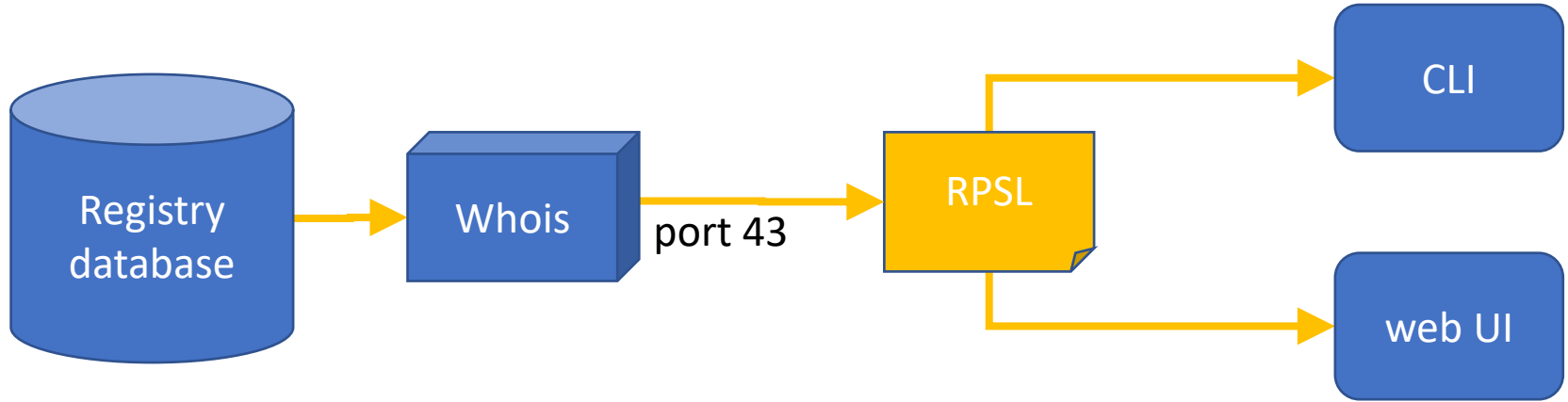
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Why is registry data accuracy important?

# APNIC database and the Internet Routing Registry (IRR)

- APNIC Whois Database
  - Two databases in one
- Public network management database
  - Whois information about networks and contacts (IP addresses, ASNs and so forth)
- Routing Registry (RR)
  - Contains routing information (routes, filters, peers and so forth)

# Whois at APNIC



- Query service on TCP port 43 (RFC 812, 1982)
- Very simple, limited service

# Whois queries

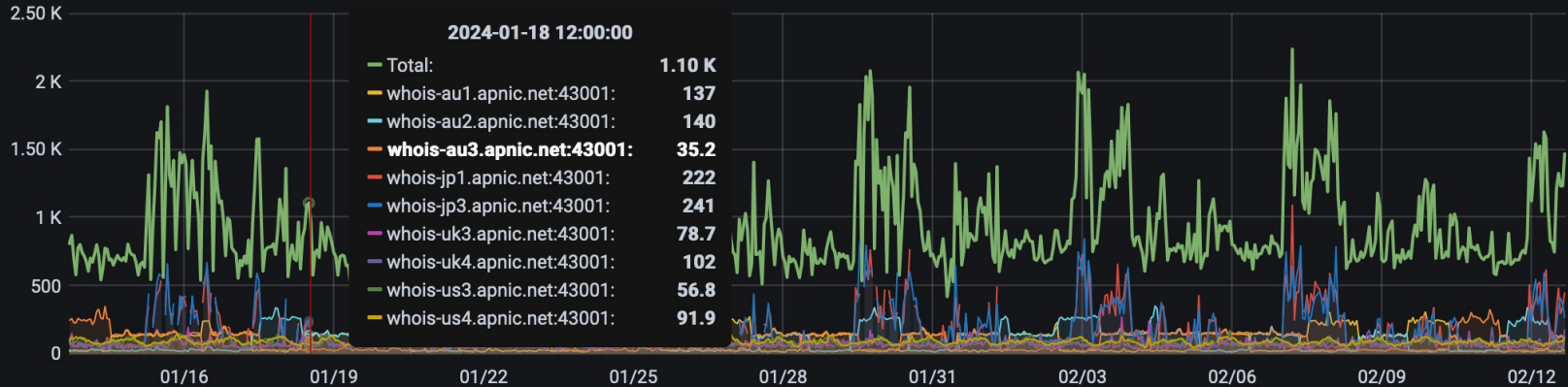
Current QPS

1300

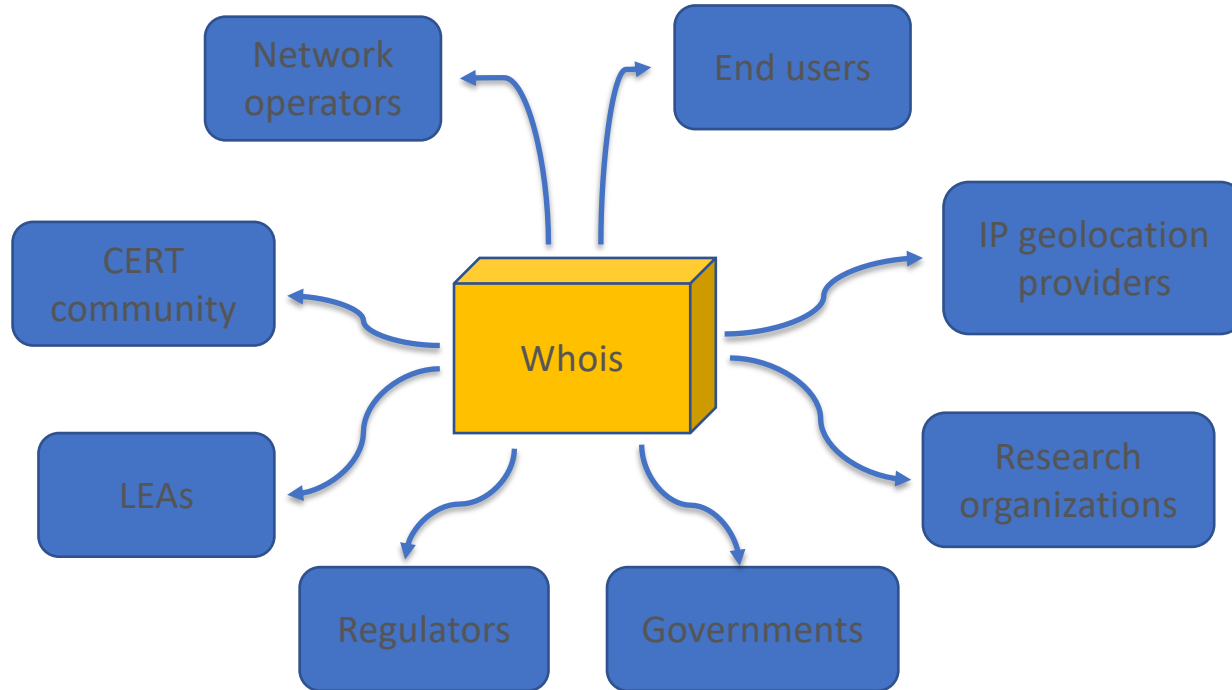
Avg QPS per node

109

Query rate per second ▾



# Whois users



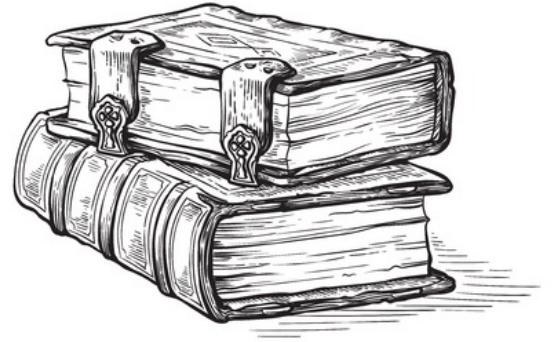
# Why is registry data accuracy important?

- If this data is not accurate, stakeholders will
  - Stop using it
  - Start using other sources

# Historical resources

- Pre-RIR delegations
  - Resources distributed by InterNIC, AUNIC, and so forth
- No formal agreement with APNIC
- Not managed under policy framework

[www.apnic.net/historical-about](http://www.apnic.net/historical-about)





# Example of historical registration

```
inetnum:      203.55.11.0 - 203.55.11.255
netname:      WESTVICINTERNET-AU
descr:        Westvic Internet
descr:        457 Raglan Parade
descr:        Warrnambool
descr:        VIC 3280
country:      AU
admin-c:      IG201-AP
tech-c:       IG201-AP
remarks:      ** Conversion note - reference 'IG201-AU' changed to 'IG201-AP'
remarks:      Record imported from AUNIC as part of AUNIC->APNIC migration
remarks:      Please see http://www.apnic.net/db/aunic/
mnt-by:       APNIC-HM
status:       ALLOCATED PORTABLE
last-modified: 2008-09-04T06:50:26Z
source:       APNIC
```

# Example of historical registration

```
admin-c:      IG201-AP
tech-c:       IG201-AP
remarks:      ** Conversion note - reference 'IG201-AU' changed to 'IG201-AP'
remarks:      Record imported from AUNIC as part of AUNIC->APNIC migration
remarks:      Please see http://www.apnic.net/db/aunic/
```

```
address:      Westvic Internet
address:      457 Raglan Parade
address:      Warrnambool
address:      VIC 3280
country:      AU
phone:        +61 55 611655
phone:        +61 55 620053
e-mail:       yogy@ansoniac.com.au
nic-hdl:      IG201-AP
remarks:      Network Manager
mnt-by:       MAINT-AU-IG201-AP
last-modified: 2011-12-22T05:16:41Z
source:       APNIC
```

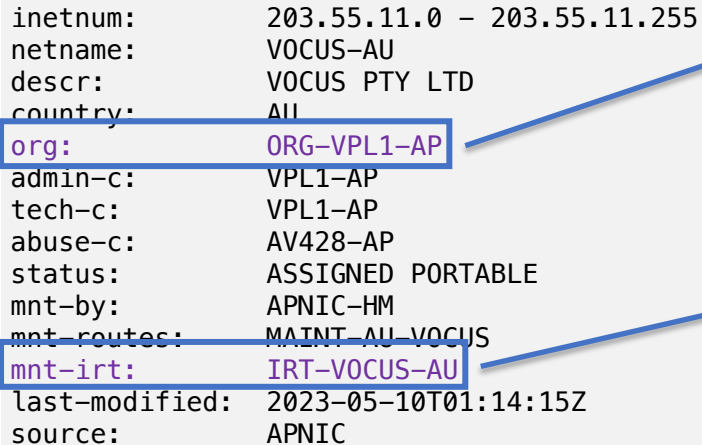
```
address:      Westvic Internet
address:      457 Raglan Parade
address:      Warrnambool
address:      VIC 3280
phone:        +61 55 611655
phone:        +61 55 620053
e-mail:       yogy@ansoniac.com.au
nic-hdl:      IG201-AU
remarks:      Network Manager
changed:      register@auenic.net 19960923
source:       AUNIC
```

# EC Resolution

- **Resolution 2021-09:** RESOLVES that all historical resource holders will need to become, or remain, a Member or Non-Member of APNIC on and from 1 January 2023, in order to continue to receive registry services from APNIC.
- **prop-147: Historical Resources Management:** Reserved historical resources can be claimed by the custodians within 12 months of the date they were marked as reserved. After 12 months, these resources will be placed in the free pool for re-delegation.

# Example of updated registration

```
inetnum:      203.55.11.0 - 203.55.11.255
netname:      VOCUS-AU
descr:        VOCUS PTY LTD
country:      AU
org:          ORG-VPL1-AP
admin-c:      VPL1-AP
tech-c:       VPL1-AP
abuse-c:      AV428-AP
status:       ASSIGNED PORTABLE
mnt-by:       APNIC-HM
mnt-routes:   MAINT-AU-VOCUS
mnt-irt:      IRT-VOCUS-AU
last-modified: 2023-05-10T01:14:15Z
source:       APNIC
```



```
organisation:  ORG-VPL1-AP
org-name:      VOCUS PTY LTD
org-type:      LIR
country:       AU
phone:         +61-2-8999-8999
mnt-by:        APNIC-HM
last-modified: 2023-09-05T02:15:21Z
source:        APNIC

irt:           IRT-VOCUS-AU
address:       Melbourne VIC AUSTRALIA 3000
e-mail:        hostmaster@vocus.net
abuse-mailbox: abuse@vocus.net
admin-c:       VPL1-AP
tech-c:        VA153-AP
remarks:       hostmaster@vocus.net was validated on 2024-01-24
remarks:       abuse@vocus.net was validated on 2024-02-07
mnt-by:        MAINT-AU-VOCUS
last-modified: 2024-02-07T21:50:52Z
source:        APNIC
```

# Project outcome

- Total number of cases: **3,303** (*7,342,080 IPs*)
- Registration updated: **910** (*4,741,632 IPs*)
- Registration removed: **2,302** (*2,407,424 IPs*)
- Pending cases: **91** (*193,024 IPs*)

# AS number registration

- Portable ASN for your own infrastructure
- Non-portable ASN for your customers

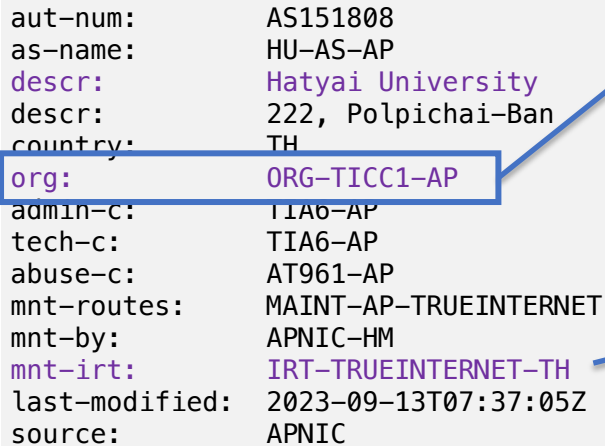
```
aut-num: AS64496
as-name: AS-EXAMPLENET
descr: ASN for Example Net Pty Ltd
country: AU
org: ORG-EXAMPLENET-AP
sponsoring-org: ORG-APNIC1-AP
import: AS64500
export: AS64494
admin-c: DE345-AP
tech-c: DE345-AP
abuse-c: DE345-AP
mnt-by: MAINT-EXAMPLENET-AP
mnt-irt: IRT-EXAMPLENET-AP
last-modified: 2018-08-30T07:50:19Z
source: APNIC
```

# Feedback

- Can be challenging to distinguish between portable and Non-portable ASNs
  - Staff turnover
  - Lack of documentation
- Limited registration published for customer ASNs
  - aut-num records in whois has Members details

# Example of old customer ASN

```
aut-num: AS151808
as-name: HU-AS-AP
descr: Hatyai University
descr: 222, Polpichai-Ban
country: TH
org: ORG-TICC1-AP
admin-c: TIA6-AP
tech-c: TIA6-AP
abuse-c: AT961-AP
mnt-routes: MAINT-AP-TRUEINTERNET
mnt-by: APNIC-HM
mnt-irt: IRT-TRUEINTERNET-TH
last-modified: 2023-09-13T07:37:05Z
source: APNIC
```



```
organisation: ORG-TICC1-AP
org-name: TRUE INTERNET CORPORATION CO. LTD.
org-type: LIR
country: TH
address: No. 18, True Tower
phone: +66-(0)-2783-0400
e-mail: ipadmin@trueinternet.co.th
mnt-by: APNIC-HM
source: APNIC
```

```
irt: IRT-TRUEINTERNET-TH
address: 14th,27 th, floor ,Fortune Town
address: 1 Ratchadaphisek Road, Din Daeng
address: Bangkok 10400
e-mail: abuse@trueinternet.co.th
admin-c: TIA6-AP
tech-c: TIA6-AP
remarks: abuse@trueinternet.co.th was validated on 2023-08-24
mnt-by: MAINT-AP-TRUEINTERNET
source: APNIC
```



# Customer ASN identity

Are you requesting this AS number on behalf of a customer?

- Yes  
 No

If so, do you agree to return the AS number to APNIC if your customer ceases to receive connectivity from you? Note: if you do not agree, APNIC cannot approve your request.

- Yes  
 No

Customer

▼

Add Customer

Maintainer object

▼

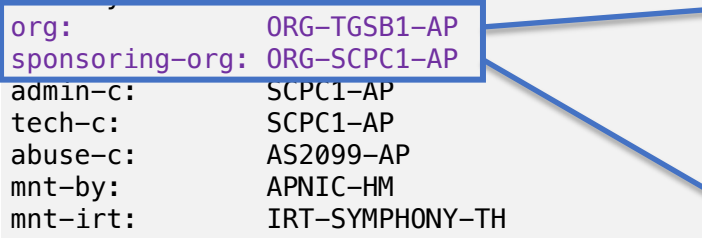
The APNIC Whois Database requires that the Customer object be registered so that it can be referenced by the aut-num objects registered on behalf of your customers.

For more information on providing AS numbers to customers, see [Policies for Autonomous System number management in the Asia Pacific region section 10.4](#).

Next

# Example of new customer ASN

```
aut-num: AS152445
as-name: GSB-AS-TH
descr: The Government Savings Bank
descr: Government Savings Bank 470
country: TH
org: ORG-TGSB1-AP
sponsoring-org: ORG-SCPC1-AP
admin-c: SCPC1-AP
tech-c: SCPC1-AP
abuse-c: AS2099-AP
mnt-by: APNIC-HM
mnt-irt: IRT-SYMPHONY-TH
last-modified: 2024-01-25T04:45:43Z
source: APNIC
```



```
organisation: ORG-TGSB1-AP
org-name: The Government Savings Bank
org-type: OTHER
address: Government Savings Bank 470, BUILDING 4
country: TH
phone: +662299-8668
e-mail: Saraban@gsb.or.th
admin-c: SCPC1-AP
mnt-by: APNIC-HM
last-modified: 2024-01-15T04:07:47Z
source: APNIC
```

```
organisation: ORG-SCPC1-AP
org-name: Symphony Communication Public Company Limited
org-type: LIR
country: TH
address: 123 Suntowers Building B, 35th-36th Floor,
phone: +66-210-1111
fax-no: +66-2101-1155
e-mail: npd@symphony.net.th
mnt-by: APNIC-HM
source: APNIC
```

# Fixing IP geolocation information

“When we are downloading from content distribution networks, it is determining that our location is from Australia, in fact, speedtest.net thinks we are in Adelaide. Is there a way to resolve this geolocation issue so we appear from Manila.”



“Our users are constantly reporting geolocation issues with Gumtree and Sony PSN sites”

“We're having issues with our address space on the Google Play store. It seems the range location can't be identified”

# Observation

- Confusion about what APNIC registry data is used for geolocation purpose

```
inetnum:      [mandatory]
netname:      [mandatory]
descr:        [mandatory]
country:      [mandatory]
geofeed:      [optional]
geoloc:       [optional]
language:     [optional]
org:          [optional]
admin-c:      [mandatory]
tech-c:       [mandatory]
abuse-c:      [optional]
status:       [mandatory]
mnt-by:       [mandatory]
last-modified: [generated]
source:       [mandatory]
```

apnic	AU	ipv4	1.0.0.0	256	20110811	assigned
apnic	CN	ipv4	1.0.1.0	256	20110414	allocated
apnic	CN	ipv4	1.0.2.0	512	20110414	allocated
apnic	AU	ipv4	1.0.4.0	1024	20110412	allocated
apnic	CN	ipv4	1.0.8.0	2048	20110412	allocated
apnic	JP	ipv4	1.0.16.0	4096	20110412	allocated
apnic	CN	ipv4	1.0.32.0	8192	20110412	allocated
apnic	JP	ipv4	1.0.64.0	16384	20110412	allocated
apnic	TH	ipv4	1.0.128.0	32768	20110408	allocated
apnic	CN	ipv4	1.1.0.0	256	20110414	allocated

# APNIC delegations

- For records maintained by APNIC, we record the economy (ISO-3166) where your organization is registered

```
inetnum:      157.15.188.0 - 157.15.189.255
netname:      UOB-TH
descr:        United Overseas Bank (Thai) Public Company Limited
country:      TH
org:          ORG-UOBP2-AP
admin-c:      UOBA3-AP
tech-c:       UOBA3-AP
abuse-c:      AU333-AP
status:       ALLOCATED PORTABLE
mnt-by:       APNIC-HM
mnt-lower:    MAINT-UOB-TH
mnt-irt:      IRT-UOB-TH
last-modified: 2024-02-08T08:18:09Z
source:       APNIC
```

# Public stats file

```
# APNIC endeavours to the best of its ability to ensure the accuracy
# of these reports; however, APNIC makes no guarantee in this regard.
#
# In particular, it should be noted that these reports seek to
# indicate where resources were first allocated or assigned. It is not
# intended that these reports be considered as an authoritative
# statement of the location in which any specific resource may
# currently be in use.
```

```
apnic AU ipv4 1.0.0.0 | 256 | 20110811 | assigned
apnic CN ipv4 1.0.1.0 | 256 | 20110414 | allocated
apnic CN ipv4 1.0.2.0 | 512 | 20110414 | allocated
apnic AU ipv4 1.0.4.0 | 1024 | 20110412 | allocated
apnic CN ipv4 1.0.8.0 | 2048 | 20110412 | allocated
apnic JP ipv4 1.0.16.0 | 4096 | 20110412 | allocated
apnic CN ipv4 1.0.32.0 | 8192 | 20110412 | allocated
apnic JP ipv4 1.0.64.0 | 16384 | 20110412 | allocated
apnic TH ipv4 1.0.128.0 | 32768 | 20110408 | allocated
apnic CN ipv4 1.1.0.0 | 256 | 20110414 | allocated
```

<ftp://ftp.apnic.net/public/stats/apnic/delegated-apnic-latest>

# Whois 'geofeed' attribute

- 'geofeed' attribute (RFC 9092) now available in whois
  - Create a CSV file containing your IP location details  
*203.176.189.0/24,AU,Brisbane, XXXXX*
  - Include URL of the CSV file in your inetnum geofeed attribute

```
inetnum:                203.176.189.0 - 203.176.189.255
netname:                APNIC-SERVICES-V4
descr:                 APNIC (Asia Pacific Network Information Centre)
descr:                 Regional Internet Registry
descr:                 6 Cordelia St, South Brisbane, QLD
geofeed:                https://raw.githubusercontent.com/APNIC-NET/geofeed/main/geofeed.csv
```

# Whois geofeed attribute

[READ MORE](#) [TEST YOUR GEOFEED](#)

### Adoption

Name	File format	Auto-discovery v4	Auto-discovery v6	Reactivity	Share
Fastah	✓	✓	✓	1 day	
IPInfo.io	✓	✓	✓	1 day	
IP2Location	✓	✓	✓	1 day	
IPData.co	✓	✓	✓	2 days	
WhoisXMLAPI	✓	✓	✓	2 days	
IPRegistry.co	✓	✓	✓	3 days	
BigDataCloud	✓	✓	✓	4 days	
apip	✓	✓	✓	4 days	
db-ip	✓	✓	✓	9 days	
IPWhois	✓	✓	✓	10 days	
MaxMind	✓	✓	✓	15 days	
IPGeolocation.io	✓	✗	✗	N/A	
IPStack.com	?	✗	✗	N/A	

Rows per page: 100 1-13 of 13 < >

[Report wrong data](#) | [Add my provider to the list](#)  
Last update: 2024-02-11

## Test your Geofeed

If you type an IP or a prefix, you can check if it is covered by a geofeed file and if the file is correct.

## Set up your Geofeed

Correct your geolocation in a few simple steps

- 1 IP OR PREFIX
- 2 GEOLOCATION
- 3 GEOFEED FILE
- 4 CURRENT STATUS

Insert a valid prefix or IP

## Operations 1

Crystal Hall B

Thu, 29, Feb 2024

14:30 to 16:00 (UTC +07:00)

1 hour and 30 minutes

Mark Duffell (chair)  
Telstra  
Senior Network Engineer

### Solve geolocation issues with RFC9092

Two years ago we introduced RFC9092, which gives back to the network operators the power to be authoritative about the geolocation of their IP resources by linking geofeed files in whois. This solution reached great support and adoption, both by geolocation/content providers and by operators. In this presentation, I will provide numbers about the adoption of RFC9092 (including number specific for the APNIC region), and explain how operators can use it to correct their geolocation automatically. I will explain how it compares to the other geolocation hints in whois. Finally, I will provide a tool that the operators can use to correct their geolocation.

Massimo Candela (speaker)  
NTT  
Principal Engineer

<https://geolocatemuch.com/>



Questions?